IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (*Currently Amended*): A method for the photocatalytic conversion of an oxygenated hydrocarbon into hydrogen comprising the steps of:

forming a suspension of an oxygenated hydrocarbon and a metal oxide semiconductor catalyst; and

irradiating the suspension with laser radiation at a single wavelength, said single wavelength being in the range of 180 nm to 520 nm at a temperature of less than 70° C. to thereby generate a high yield of hydrogen, said single wavelength of laser radiation being delivered as a pulse having an energy per pulse of between approximately 50 mJ and 300 mJ.

Claim 2 (*Original*): A method for the photocatalytic conversion of an oxygenated hydrocarbon according to claim 1 which includes the step of providing a semiconductor catalyst selected from the group consisting of nickel oxide (NiO), iron oxide (Fe_2O_3), zinc oxide (ZnO), tungsten oxide (WO_3) and titanium oxide (TiO_2).

Claim 3 (*Original*): A method for the photocatalytic conversion of an oxygenated hydrocarbon into hydrogen according to claim 2 in which the suspension is maintained at about 22° C.

Claim 4 (*Original*): A method for the photocatalytic conversion of an oxygenated hydrocarbon into hydrogen according to claim 3 in which the suspension is irradiated for a period of about 30 minutes.

Claim 5 (*Currently Amended*): A method for the photocatalytic conversion of methanol into hydrogen comprising the steps of:

providing a mass of methanol and a semiconductor catalyst;

forming a suspension of methanol and semiconductor catalyst; and

irradiating the suspension with laser radiation at a single wavelength, said single wavelength being in the range of 180 nm to about 520 nm at a temperature ~~at~~ between about 10° C. and about 70° C. to generate a high yield of hydrogen, said single wavelength of laser radiation being delivered as a pulse having an energy per pulse of between approximately 50 mJ and 300 mJ.

Claim 6 (*Original*): A method of photocatalytic conversion of methanol into hydrogen according to claim 5 in which the suspension is irradiated with light having a wavelength of 355 nm at room temperature.

Claim 7 (*Original*): A method of photocatalytic conversion of methanol into hydrogen according to claim 5 in which the suspension is heated to about 60° C.

Claim 8 (*Original*): A method of photocatalytic conversion of methanol into hydrogen according to claim 5 in which the semiconductor catalyst is selected from the group consisting of nickel oxide (NiO), iron oxide (Fe_2O_3), zinc oxide (ZnO), tungsten oxide (WO_3) and titanium oxide (TiO_2).

Claim 9 (*Original*): A method of photocatalytic conversion of methanol into hydrogen according to claim 8 in which the suspension is irradiated with illumination of about 150 mJ per pulse laser radiation at a wavelength of about 355 nm.

Claim 10 (*Original*): A method of photocatalytic conversion of methanol into hydrogen according to claim 9 in which the suspension is irradiated for a period of at least about 30 minutes.

Claim 11 (*Original*): A method of photocatalytic conversion of methanol into hydrogen according to claim 8 in which the suspension contains at least about 100 mg of metal oxide catalyst per 50 cm^3 of methanol.

Claim 12 (*Currently Amended*): A method for the photocatalytic conversion of methanol into hydrogen according to claim 11 in which the suspension contains about 500 mg of WO_3 per 50 mL of methanol and is irradiated with a high power laser beam of 355 nm

wavelength generated from a third harmonic of an Nd:YAG laser ~~with an energy per pulse of between about 50 to 300 mJ~~ at about 22° C.

Claim 13 (*Original*): A method for the photocatalytic conversion of methanol into hydrogen according to claim 11 in which the suspension contains about 500 mg of NiO_2 per 50 mL of methanol and is irradiated with a high power laser beam of 355 nm wavelength from a third harmonic of an Nd:YAG laser with an energy per pulse of about 150 mJ at room temperature.

Claim 14 (*Original*): A method of photocatalytic conversion of methanol into hydrogen according to claim 14 in which the suspension contains about 500 mg of Fe_2O_3 per 50 mL of methanol and is irradiated with a high power laser beam of 355 nm wavelength generated from a third harmonic of an Nd:YG laser with an energy per pulse of about 150 mJ at room temperature.

Claim 15 (*Original*): A method of photocatalytic conversion of methanol into hydrogen according to claim 11 in which the suspension contains about 500 mg TiO_2 per 50 mL of methanol and is irradiated with a high power laser beam of 355 nm wavelength generated from a third harmonic of an Nd:YAG laser with an energy per pulse of about 150 mJ at room temperature.

Claim 16 (*Original*): A method of photocatalytic conversion of methanol into hydrogen according to claim 11 in which the suspension contains about 500 mg ZnO per 50 mL of methanol and is irradiated with a high power laser beam of 355 nm wavelength generated from a third harmonic of an Nd:YAG laser with an energy per pulse of about 150 mJ at room temperature.

Claims 17-22 (*Canceled*)

Claim 23 (*Currently Amended*): A method for the photocatalytic conversion of an oxygenated hydrocarbon according to claim 3 which includes the step of providing ~~a~~ an oxygenated hydrocarbon selected from the group consisting of: methanol, ethanol ~~or~~ and propanol.

Claim 24 (*Currently Amended*): A method for the photcatalytic conversion of an oxygenated hydrocarbon according to claim 23 which includes the step of controlling the laser radiation frequency to control the reaction process and yields from ~~methanol, ethanol and other~~ the oxygenated hydrocarbon ~~hydrocarbons~~.